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厦　门　大　学

博　士　学　位　论　文

期权方法在投资决策中的应用研究

Applied Studies of Option-based Approach
On Investment Decisions

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摘要

期权理论的产生和近 30 多年来日新月异的发展不仅是金融衍生领域的重大成就，还给传统投资理论注入了新鲜血液，形成了更为科学的投资决策方法。传统投资决策方法忽略了投资项目中的各种选择权利或管理灵活性的价值以及未来成长机会的价值。期权方法的出现弥补了这种不足。本文就是研究如何运用期权方法解决传统投资决策方法无法解决的、不确定条件下具有选择权或管理灵活性的投资决策问题。

本文共有六章，分为四个部分：首先，探讨布莱克—斯科尔斯模型、CRR 二叉树模型、风险中性估值方法、蒙特卡罗模拟方法等主要期权估价模型和方法，分析传统投资决策方法的局限性。其次，分析投资决策期权方法本质以及投资决策中实物期权的分类、组合特征，总结估价应用步骤。然后，系统而具体地研究期权方法在四个投资领域中的期权分析与估价应用过程。最后，提出在我国投资决策中推广期权方法的两个建议。本文研究认为期权方法是对具有不确定性和灵活性的不可逆投资进行评价和决策的有效方法。它在一定程度上改善了传统投资决策方法的局限性，但这种改善只是单向的。房地产开发投资、自然资源开采投资、并购投资和创业投资等战略性投资领域的投资项目往往具有期权特性，其投资决策问题，需要期权方法来解决。蒙特卡罗模拟是一类模拟统计模型，是统计方法思想的体现。蒙特卡罗模拟方法和二叉树模型是解决投资决策实物期权估价问题的有效工具。本文主要创新之处可概括为：①研究总结了投资决策期权方法。②运用蒙特卡罗模拟方法解决投资决策中的期权估价问题。③综合全面地研究了不同投资领域中的期权分析和期权估价问题。

关键词：期权方法；投资决策；实物期权

Abstract

The creation of option theory and its succedently continuous changes and the improvements within the latest 30 years is not only an important achievement in financial derivatives realm, but also a fresh blood into the traditional investment theory, which becomes a more scientific investment decisions method. The traditional investment decisions method neglected the value of every kind of option or managerial flexibility within investment projects and the value of future growth opportunities. The option-based approach fills up this kind of shortage. This paper studies how to make use of the option-based approach to solve investment decisions problems with flexibility in the presence of uncertainty and irreversibility which traditional investment method can't resolve of.

This paper is divided into six chapters and contains four main parts. Firstly, the author discusses the main option valuation modles and methods, including the Black-Scholes model, CRR binomial modle, risk-neutral valuation methods and Monte Carlo simulation methods, and analyzes the limitations of traditional investment decisions methods. In the second part, the author analyzes the nature of investment decisions option-based approach and the classification and combination characteristic of the real options in investment decisions, and summarise the application steps of option valuation. Then, the author systematically studies option analysis and valuation application process in four investments fields in a specific way. Finally, the author puts forward two suggestions on how to popularize the option-based approach in investment decisions process in China. The studies of this paper suggest that option-based approach is a valid tool in evaluating investment projects with irreversibility and making decisions in the precence of uncertainty and flexibility. It covers the limitations of traditional investment

decisions methods on certain degrees, but this kind of improvement is just one-way. Projects in strategic investment fields such as real estate development investment, natural resource exploitation investment, M&A investment and venture capital investment usually have the option character. The investment decisions problems in these fields need the option-based approach. Monte Carlo simulation is a kind of simulation and statistics model and is the idea of statistical method. Monte Carlo simulation and Binomial model are useful techniques for evaluating real options in investment decisions process. This paper has the following initiatives: (1)The author discusses and summarizes the option-based approach in investment decisions. (2)The author uses Monte Carlo simulation to solve option valuation problems in investment decisions process. (3)The author systematically and comprehensively studies option analysis and option valuation in some different investment fields.

Key Words：Option-based Approach; Investment Decisions; Real Options.

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